File CRAFT

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DRAFT completed 2/5/80 by DDA-ODA Task Force representing ODP

Introduction 25X1A [redacted]

For the past two years IMS, in conjunction with several DDA components, has been pursuing a program called CRAFT which combines records management programs and ADP support to provide efficient and secure information management in the field. The objectives of this program have been, and will continue to be, to increase the efficiency and effectiveness of field stations; to reduce the risk of compromise of sensitive information; and to establish a systems approach to field/Headquarters information needs. The current CRAFT plan called for an orderly phased implementation of ADP capability over the next 10 years.

Recent examples of the instability of the world's political, economic and social environment emphasize the need to improve our records management posture in the field as soon as possible to reduce the potential for the compromise of classified information. The primary goal of enhanced management information remains paramount, however, and thus the actions taken must be accomplished without loss of efficiency within the overseas stations or at Headquarters.

It is recognized that this is not a problem that can be totally solved by the introduction of ADP and improved communications. Consequently, the DO has already instituted an aggressive program in the field to eliminate unnecessary paper holdings, expand the use of microforms (which can be destroyed

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

more quickly than paper) wherever possible, develop more effective destruction devices, and improve records management procedures. However, since automation can play a significant role in this program, the DDO has directed that a plan for accelerating the development of ADP systems to support DO field stations be prepared. This paper addresses the concepts to be employed and weighs gains and risks in responding to this need for acceleration.

Our efforts to accelerate the ADP element of CRAFT will build on our accomplishments and the knowledge we have gained to

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advantage of the Agency Standard Terminal which ODP has been developing and which is currently being evaluated by both ODP and IMS. This device is one of the key building blocks in the plans for speeding up the program.

Although this paper presents a conceptual framework and alternatives for the ultimate system for achieving the stated objectives, it focuses on what can be done in the interim to assist the greatest number of field stations in the shortest period of time. Costs and resource estimates are included for the interim solution. Further intensive interdirectorate planning will be required to develop a thorough implementation plan, including costs and personnel requirements, for the final systems architecture.

The paper begins by describing the objectives for the program. This is followed by a preliminary statement of the functional requirements, supported by a description of existing and planned Headquarters/field information storage and retrieval needs. Based on the functional requirements, system concepts are considered and a set of recommendations are made. Finally, the resources and time schedule for the recommendations are outlined.

Approved For Release 2002/11/15 CIA-RDP84-00933R000500140011-2

Objectives

CRAFT is a system to support the information needs of overseas and Headquarters components. While the name CRAFT derives from the acronym "Clandestine Records Applications Field Terminal" it is now used as an umbrella concept that significantly enhances the services of the present communications and data processing facilities supporting overseas activities.

The objectives for this program are to:

- ESTABLISH A SYSTEMS APPROACH WHICH WILL PROVIDE FOR THE INFORMATION NEEDS OF STATION OFFICERS AND RELATED HEADQUARTERS COMPONENTS.

  The CRAFT information management objective is to give the line operations officer more information, faster, and in a better form to facilitate decision making. Counterintelligence operations and positive intelligence operations frequently involve analysis of large masses of data on target personalities. Through the existing DO Records System, Headquarters currently provides compilations such as lists of known intelligence personnel, travel patterns, and presence lists for individual countries. These are pouched to the field in microform or Xerox listings

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

with delays of weeks or months depending on the priority of the need. Operational traces often require a desk analyst at Headquarters to research information in the records system and summarize results for the field. Under the CRAFT concept, this process is to be speeded up, giving the field the access to its own files and indices in a way that permits manipulation to do the kind of analysis required. While it is an enhancement to the Headquarters system, it does not replace it, but rather gives the field a capability for analysis with additional information available from Headquarters when needed. In other words, CRAFT is to allow Headquarters to disseminate information, and the stations to hold it; add to it; purge it (without fear of losing it if needed later); and manipulate it to suit local and immediate needs. The support officer at the station is to be able to perform similar activities with regard to personnel, logistics, financial, security, and medical records.

- REDUCE THE RISK OF COMPROMISE OF SENSITIVE INFORMATION IN THE EVENT OF A STATION OVERRUN.

Improvements in field security and protection of sources/methods information, and in the ability to

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

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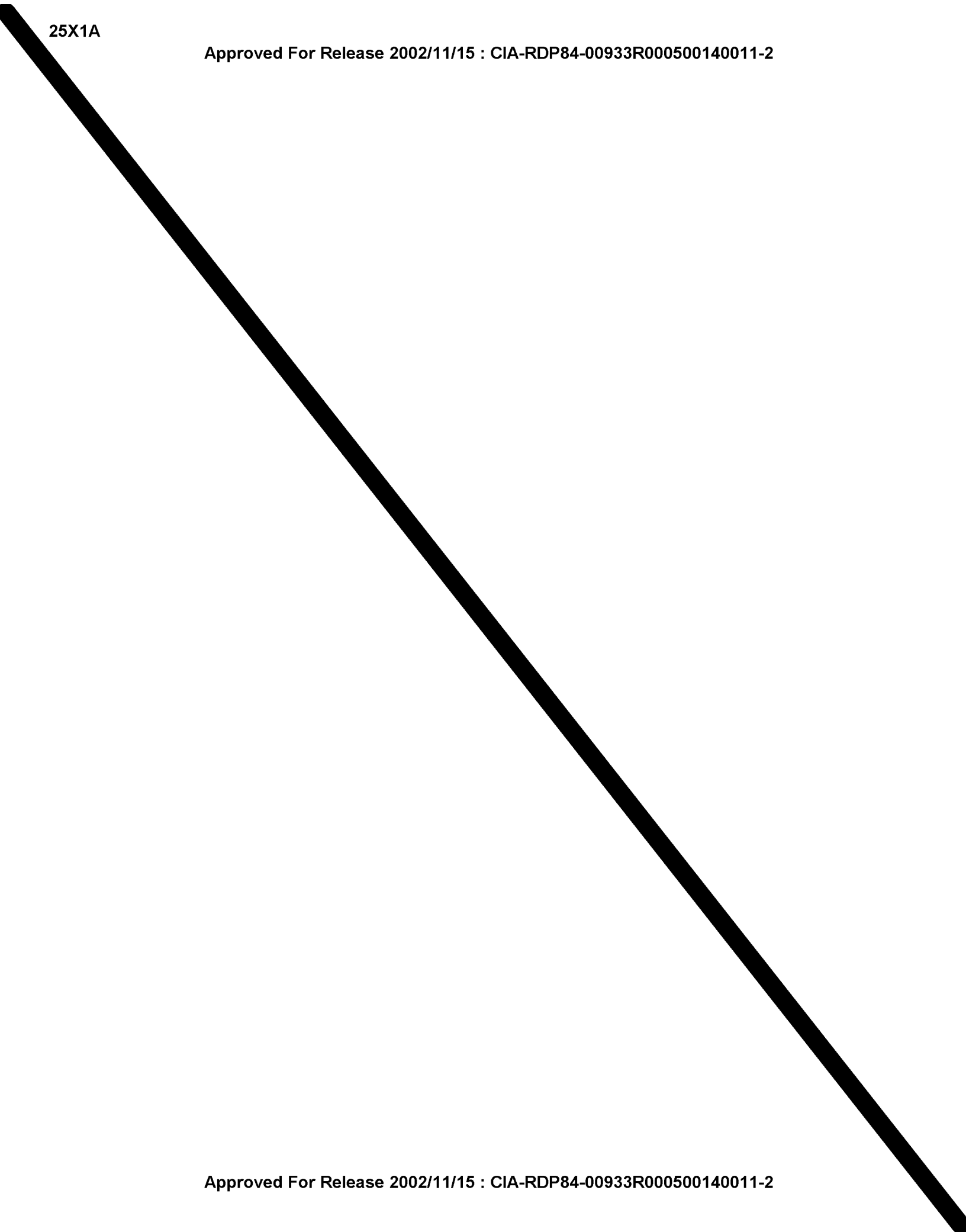

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

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more efficient use of personnel. This activity must also enhance the case officer's ability to perform his job by providing him a capability for rapidly collating and analyzing information that currently requires hours of searching through paper files. It is also required to reduce the drain on resources in the areas of records management, registry operations, pouch service (now costing over $2.2 million per year), and the management, storage, and use of the profusion of documents, regulations, forms and office machinery (typewriters, Xerox machines, safes) now needed to support field activities.

Requirements

While the specification of the functional and system requirements should proceed from a direct analysis of present record holdings in the field and at Headquarters, it is important that system specifications not be developed for just the present activity but be developed to provide the requisite flexibility to support information management needs as specific field holdings change in response to changing Agency requirements.

To provide this flexibility, as well as to meet current field station needs, CRAFT must provide the following categories of services:

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

- Word processing to assist in the preparation and editing of textual data

- Data processing to assist in the storage and retrieval of information from various filing systems

- Document storage and retrieval to assist in the management of information retained in this form

- Interface to the Communications System to assist in the transmittal of data between Headquarters and the field

- Special communications and information services to assist NOC and agent activities.

In order to prepare a foundation for the system concepts and the specific recommendations contained in this document, the following paragraphs will provide a representation of CRAFT functional requirements based upon existing and planned data processing activities. A description of field and Headquarters records holdings are presented both from the systems viewpoint and the end users view. Finally, certain systems requirements and constraints are presented.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

HEADQUARTERS/FIELD RECORDS HOLDINGS

I. OPERATIONAL

The DO Records System consists of three basic components. The first is comprised of all the documents and records which the Directorate receives, produces, and uses in executing its assigned mission. The second component is the records management program, established by federal statute for the efficient management of all aspects of the records system. These two components of the system exist both at Headquarters and in the field. The third component is the automated subset of DO information, deemed most critical to its operational mission, which is processed, stored, controlled, and retrieved by computer at Headquarters. This subset includes the central automated information control and retrieval system (ALLSTAR) and various data base applications which provide direct support to the DO divisions and staffs.

Looking first at records in the field, information on paper converges on the station from [redacted] 25X6 agents, non-official cover officers, State Department, military, and other agency representatives, and from Headquarters.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

The substance of the information, how it is acquired, its sensitivity, quality, urgency, and its pertinence to other data all vary and dictate the kind of handling it receives, including whether or not it must be transmitted to Headquarters. Messages destined for Headquarters are typed, often several times, and carried to the Communications Center where they are processed through the command communications system to Headquarters for relay via the Cable Dissemination System to the action element.

Information is stored in paper form at the station in both official files and soft files maintained by case officers. It may be categorized (as on Form 1719, Field Records Inventory) as administrative support information; personality, operational activity, or general reference information; auxiliary records, such as logs, pouch manifests, or classified blank forms; chronological records held for convenience of reference; and various types of indices. Maintenance of and retrieval from these files is time consuming and labor intensive. In addition, there is information in other than paper form, including microfiche, aperture cards, audio tapes, and film.

Studies (Ref. _____) show that there are common characteristics among small, medium and large stations of the information flow among work areas and functions performed on that information. Messages are created, edited, coordinated, released, stored, and retrieved in all stations, regardless of

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size. Likewise, the functions of indexing, index checking, target analysis, and reporting must be performed on operational information and a set of administrative and reporting functions on finance, payroll, logistics, personnel, and accounting information. While these functions occur in all stations, the size of the station determines their scope. In the smallest station, 1 or 2 people might cover all areas. In a large station

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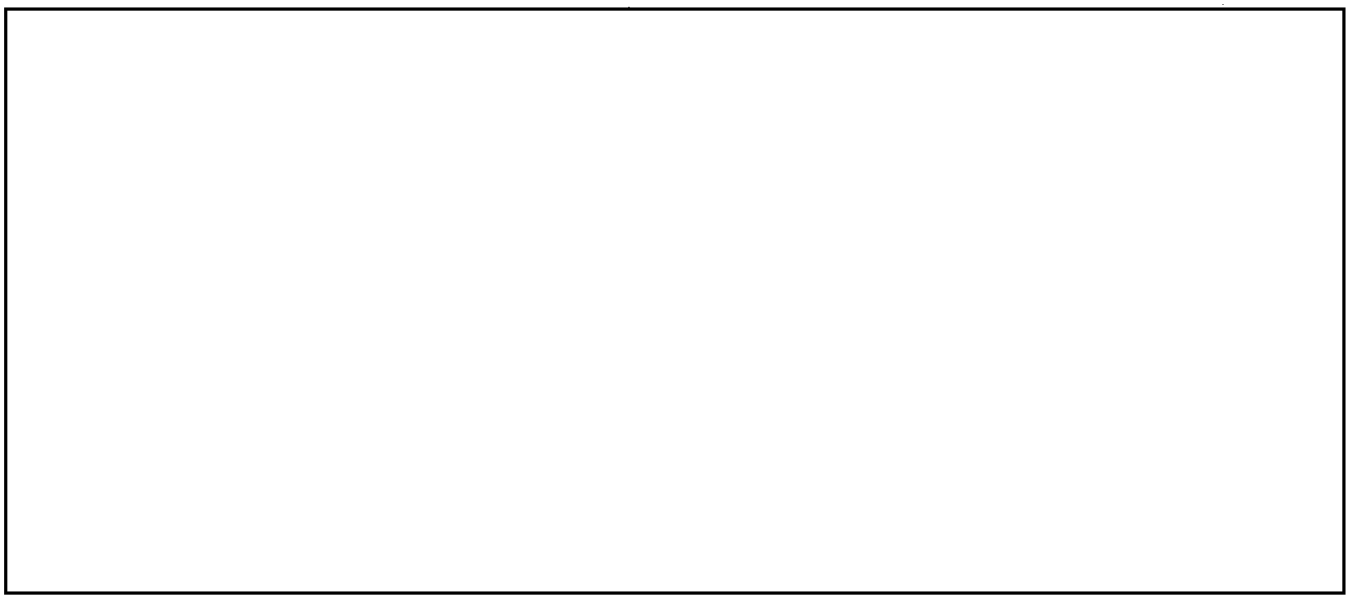

word processing equipment which is used for the preparation and editing of electrical messages and correspondence. The data processing and document storage and retrieval requirements will be supported by a Honeywell Level 6 minicomputer using the INFO 6 data base management system. The requirements include:

- Central Electrical Chrono
- Citation Index
- Branch Electrical Chrono
- Biographic Index
- Transmitted Messages

- Released Messages
- Class A (financial)

Communications support is required for the transmission of electrical messages, some correspondence, and some administrative data both [redacted] and Headquarters and between [redacted] This support will be provided through the communicating aspects of the VYDEC equipment and dial-up telephone data communications. These communication and large scale data processing and document storage and retrieval services are representative of the type needed for this architecture and for activities at a large station without records back-up and restoration.

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The testbed activity in [redacted] (described in Ref. _____) has many of the same characteristics of the [redacted] project, but the number of messages received and sent; the volume of information stored, retrieved, and manipulated; and the numbers and types of personnel supported are considerably smaller.

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Looking at the Headquarters end, information transmitted from the field is handled in such a way that it can be used to provide subsequent support to the originating station and to others on a need to know basis. Upon arrival, messages are printed and disseminated to the appropriate directorates and

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some are relayed to other government agencies. Operational messages are sent to Branch Managers in the Directorate of Operations for action, often resulting in guidance or information being transmitted back to the field. Concurrently, messages (both incoming and outgoing) are analyzed and processed into the central automated information control and retrieval system (ALLSTAR).

While ALLSTAR has many subsystems and capabilities (described in Attachment ___), the nucleus of that system consists of:

- Special Trace and Retrieval (STAR) - the biographic counterintelligence index system

- Document Reference (DRS) - the document and file location and status subsystem

- WALNUT - the microfilm document storage and retrieval system.

- Collection of Operational Messages Electrically Transmitted (COMET) - the document storage and retrieval system for all operational electrical traffic since 1978.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

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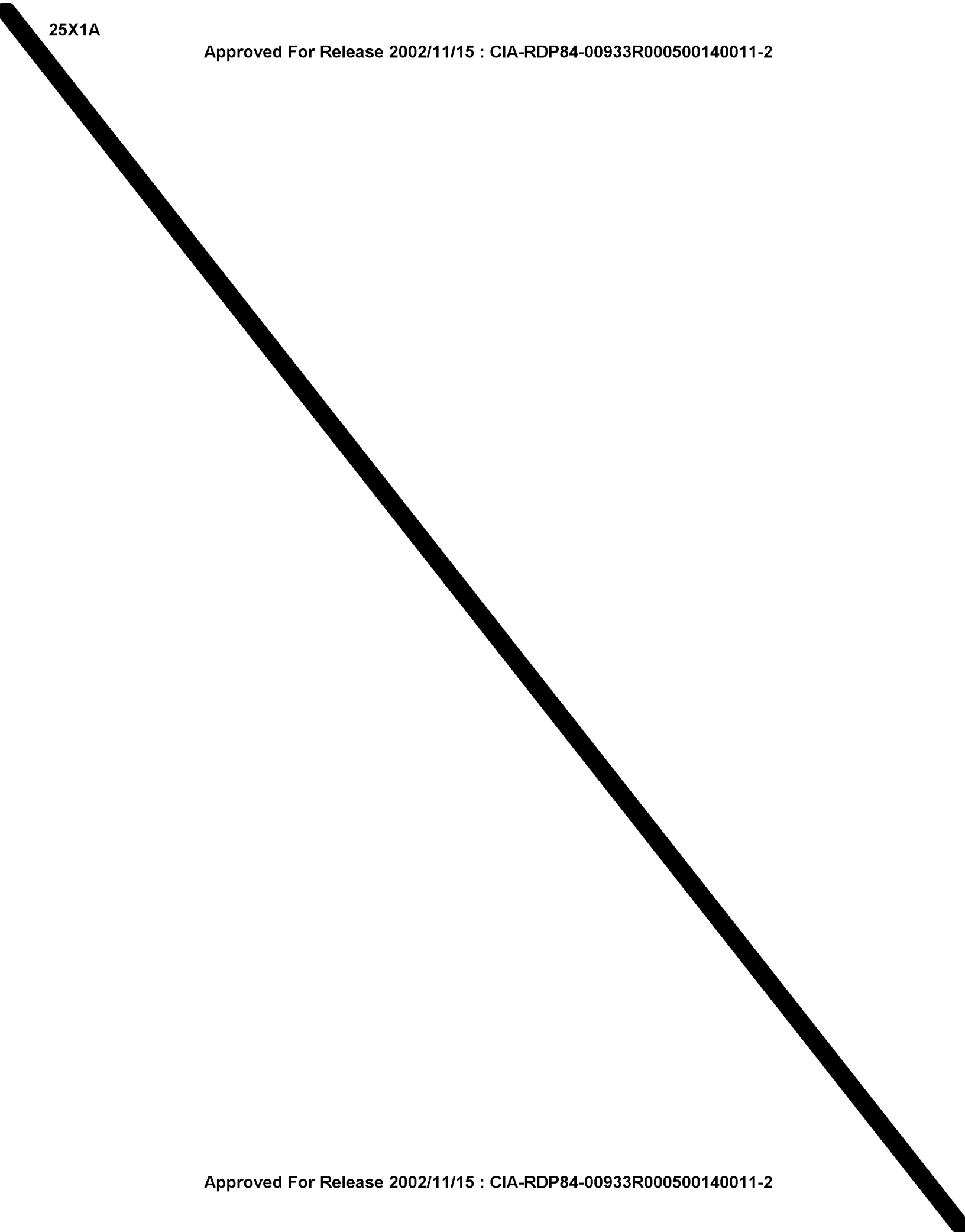

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

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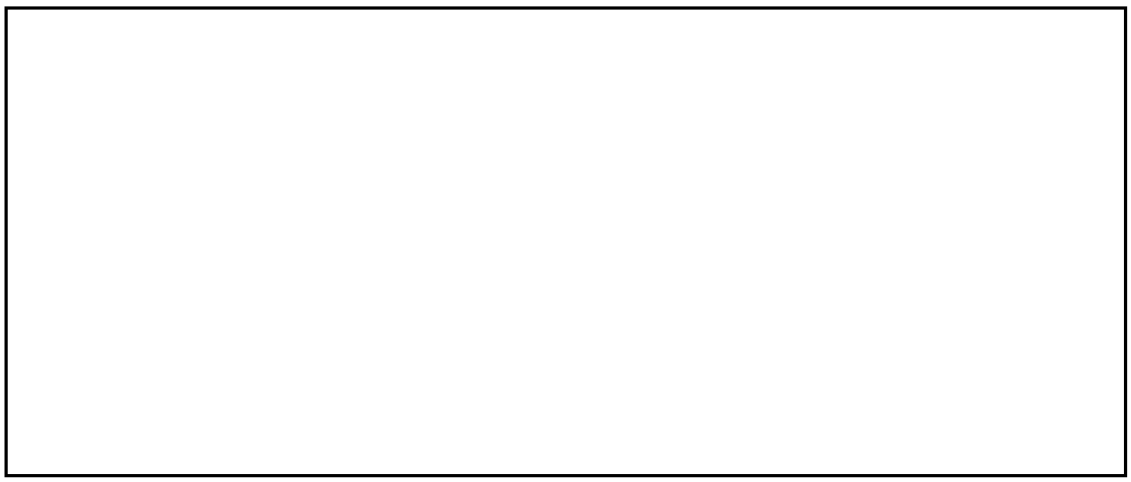

Administrative support and reference systems.

With the exception of this latter category, a majority of the information contained in these data base systems is derived from field reporting.

Attachment ____ contains a description of these systems.

II. ADMINISTRATIVE

Information in the field maintained by support officers include personnel, logistics, financial and security data.

Personnel information of interest to the field include such items as personnel actions, qualifications and training, hospitalization and insurance, and time and attendance. Directly related to the field information are records systems maintained at Headquarters.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Personnel records at Headquarters are maintained within a series of data bases. The primary system for personnel information is known as PERSIGN II (ref. PERSIGN II Project Proposal). This, in turn, interfaces to other systems such as TRAIN (ref. ____) which contains training records. The PERSIGN II document identifies the Headquarters automated personnel records systems. Automated personnel records systems for most Agency components (including field stations) do not presently exist. (One exception is the Office of Communications COMCON system. The DO maintains similar support systems as referenced.) The office of Data Processing plans to study component personnel records systems (called "virtual PERSIGN") during FY-80. Initial efforts to automate time and attendance (T/A) information began in FY-79 with the electronic T/A system, ETARS (ref. ,.

Logistics information in the field includes activities related to requisitioning and accounting for non-expendable property. Also of interest is monitoring maintenance and use of equipment. Headquarters activities include the full-range of material management activities including: requisitioning, procurement, receiving, inventory, distribution, and reporting. The Office of Logistics maintains several records systems in support of these activities. Agency components also maintain files in support of field accounting and equipment use analysis. Many of these systems are presently automated. In FY-80/81 a study shall be performed by the Office of Data Processing on the

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

development of an integrated materiel management system which will also assist Agency components, including field stations, in performing their materiel management activities (Ref. attachment describing MMP).

Financial systems used in the field are categorized by the station size, Class A, Class B, and smaller. The functional requirements for the Class A station have been brought together and published in the Office of Finance Class A Station Accounting System (CLASSA) Requirements Specification document. This system will address both the operating year program as well as budget planning. This system will produce reports for passage to Headquarters for consolidation into Headquarters financial systems.

The operating year budgetary activities are supported at Headquarters primarily by the automated General Accounting System. The program, OMB, and Congressional budget planning exercises are supported primarily by the automated Financial Resources System. Both systems are large and complex and are described elsewhere.

The CLASSA system as presently defined does not address all financial record holdings at Class A stations. As a result, the Office of Finance performed a study on this issue. Their preliminary considerations on the options and procedural

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

alternatives for the reduction and/or conversion of field station financial records are included as an attachment/reference.

Presently the Office of Security services stations and bases in Western Europe and Asia through regional offices in

25X1A [redacted] Stations and bases in other parts of the world are serviced from Headquarters. Security information held in the field includes the results of physical and technical security surveys conducted at overseas stations and bases. Information is also maintained regarding the results of agent

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information produced and held by the regional security offices, but none of the systems are presently automated.

Security automation activities at Headquarters, though not directly related to field activities include the TSCADS data base. This is an inventory of Top Secret/Controlled documents.

SYSTEM REQUIREMENTS AND CONSTRAINTS

The objective to reduce the risk of compromise of sensitive information necessitates a rapid system development. Because of the scope of CRAFT and practical engineering

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

constraints, several years are required for full system realization even under the most aggressive efforts. Therefore, an interim system solution is necessary and must meet the following criteria:

- early implementation (TBD)

- use of current and available technology (TBD)

- use of current experience gained from the Testbed efforts (TBD)

- use of existing space, power, and environmental conditions at current station locations with only minimal modifications to equipment and facilities. (TBD)

- use equipment and facilities as they are applicable to a long term solution.

In other words, minimize, to the extent reasonable, the economic costs of migrating from the interim to long term solutions.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Applicable to any solution are the following:

- easy to operate by non-ADP professionals (TBD)

- response time (TBD)

- reliable (TBD)

- maintainable (TBD)

- available (TBD)

- equipment meets TEMPEST criteria (ref. _____)

- preclude exposure of DO sensitive information to non-Agency personnel (TBD)

- minimize DO and DDA personnel required at field stations in support of CRAFT (TBD)

- satisfy information systems security requirements (TBD; ref. _____)

- provide backup and recovery in case of system outage. (TBD)

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

System Concepts:

Introduction

Because the functional requirements as stated do not specify the details necessary to size and develop a system, it is not yet possible to accurately project a single system architecture or system design for the long term solution. It is, however, possible to discuss architectural and system concepts, considerations, alternatives and constraints to determine the potential scope of a long-term CRAFT project.

Architectural Concepts

The architectural concepts are discussed with reference to the primary services the system must support: word processing, data processing, document storage and retrieval, and communications. The discussion below establishes a fundamental design trade off. By placing data processing and document processing activities in the field, the additional burden placed on the communications segment of the system is minimized. This is at the expense of some research and development leading to a computer system for the field that can satisfy the computational requirements and physical constraints. This solution introduces new security and maintenance requirements. By minimizing the data and document processing elements in the field, the

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

communications segment will bear a heavy burden of requirements. An increased burden on Headquarters computational facilities will also occur. Intuitively this approach appears to be considerably more expensive but it is within the scope of present technological capabilities and presents a better design from security and maintenance viewpoints.

Only detailed engineering analysis will provide a final answer as to the proper mix of centralized versus distributed resources required to provide the "best" system. An additional constraint, or opportunity, may be implied by existing and planned ADP and communications activities.

Word Processing

While it is possible to provide word processing services remotely from the user, it is unlikely that this would be a characteristic of the CRAFT design. The technical developments in this field allow all but the the most complex word processing functions (e.g. syllable hyphenation) to be performed in the user's terminal. These systems are supported by modest amounts of local storage, usually "floppy" disks. The Agency standard terminal represents an example.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Data Processing

The data processing services required are interactive information storage and retrieval activities. No requirements have been identified for extensive data transformation services (i.e. no scientific or computer simulation/modeling applications have been identified). A requirement has been established to provide a back-up copy of field record holdings in case of a need for their restoration. If all data processing elements are located in the field, this support does not entail any additional data processing at Headquarters (i.e. data storage for retransmission may be provided by communications support). At the other extreme is an alternative to provide all field records from data bases held in central files at Headquarters. Adequate information to determine the data processing load this would generate is not presently available.

Distributed Approach

Alternatives which involve placing data processing elements in the field present several design considerations. At present some field record holdings relate to Headquarter systems (ALLSTAR, GAS, etc.). This implies that there is a relationship between field data processing and that performed at Headquarters. An analysis must be performed to determine the distributed data

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

processing design specifications. As the data processing involves data base activities, there will probably be a need for a distributed data base architecture. Compatibility between Headquarters and field data processing elements will be a design consideration (e.g. Reference ODP's GIMINI project).

Because of the environmental and technical security requirement for CRAFT, consideration should be given to the use of or development of full MIL-SPEC equipment. These computer systems generally can perform in severe environmental conditions and meet emanations restrictions. The primary weaknesses of this

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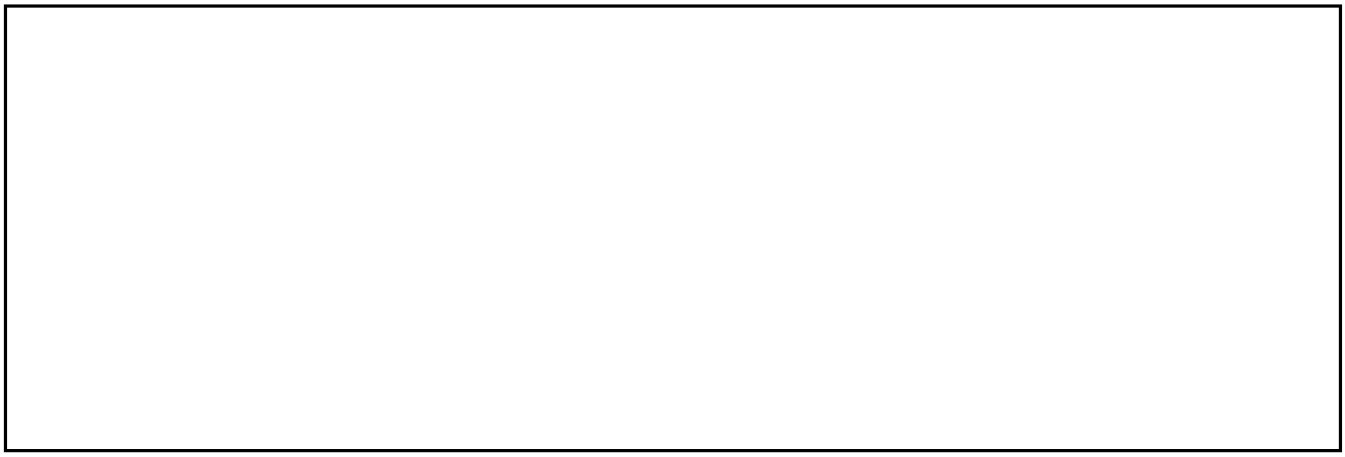

As significant quantities of sensitive data would remain in the field under this approach an R&D program should be considered to provide data encryption for the secondary storage media (disks and magnetic tape) of field data processing elements. Data access controls to achieve compartmentation must also be addressed. These techniques must be developed to minimize any requirement for emergency destruction methods.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Another technical improvement would be the substitution of solid-state memory devices for the mass storage requirements of the field data processing equipment. Charge-coupled devices and bubble memories may be able to replace the disk and tape units. As mechanical devices have the highest power, environmental support, and maintenance requirements solid-state memories would reduce these problems. Economies in space would also be expected. Both the data encryption and storage device technology would require research and development before it would be feasible to consider them for the CRAFT design.

System availability will necessitate redundancy of components, increasing the amount of hardware in the field. As shown elsewhere in this paper the personnel resources required to maintain equipment in the field are considerable. This is a negative aspect of this design approach. The use of pouched microforms should be addressed as an approach to back-up in case of system unavailability.

Assuming the technical problems can be resolved and a minicomputer system can be developed to meet field requirements, the most important problem remains unresolved. This is the problem of system expansion. The computational facilities are provided to achieve a level of data processing service. If requirements were to increase, the data processing equipment must allow for normal system service growth. This is an element that

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

must be designed into the development. Given the severe environmental restrictions, system growth may be a very restrictive requirement for this design approach.

Centralized Approach

An approach which places the data processing support at Headquarters must also be considered. The best analysis approach would be similar to that taken for the SAFE system. The thrust of SAFE (See SAFE Project Plan and Management Plan and SAFE Statement of Work Ref. _____) is to provide a set of services to the National Foreign Assessment Center intelligence analysts. CRAFT is a program to provide a set related services to the DDO officer and DDA support officer, primarily overseas. The remoteness of the officers from the equipment presents a complex and costly telecommunications problem, described below.

The support required must address the relationship between the field officers' activities and those that occur at Headquarters. Clearly some records maintained by an officer in the field are for local use. Therefore the processing of these files at Headquarters would be totally separable, but similar from officer to officer and station to station. Some records activities in the field clearly relate to Headquarters activities. These must be totally analyzed to possibly

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

redistribute functions under the CRAFT concept. It is not sensible to directly automate procedures which have evolved due to the nature of the existing communications and data processing capabilities of the Agency. The relationship between the separable or uncoupled field/Headquarters activities and the closely related or tightly coupled field/Headquarters activities should be reviewed. An analysis of why officers in the field keep certain records (perhaps due to a present lack of support from Headquarters) may indicate certain changes in light of this CRAFT concept. It is important to design a system which most closely matches the functional requirements of the DDO and DDA officer, whether overseas or at Headquarters. An effort of this size must maximize the benefits to the end users as stated at the outset in this paper. System operability will be enhanced if the system design closely matches the "natural" flow of the work performed by the individual officer's area of responsibility.

Clearly, by analogy to SAFE, the data processing costs may be considerable, requiring multiple mainframes to provide the world wide data processing needs as well as to provide redundancy for system availability. But costs aside, the technology to achieve this solution is well understood. Furthermore the space, power, environment, and equipment characteristics are well within the technology of the commercial vendors of ADP. Maintenance and support is well understood. This approach has a relatively low risk from a technological viewpoint. It is nonetheless a large development effort with the attendant risks of that process.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Document Storage and Retrieval

Document storage and retrieval as defined in the functional requirements refer to textual data only. There is no requirement for high-quality imagery. One option is to store and retrieve documents from the data processing subsystem. The other extreme is to provide this service through separate equipment with no interaction with the data processing elements. This is another area that requires analysis.

Considerable effort must be placed in the station operations analysis to minimize need for hard copy. Systems with this capability present unusual engineering needs. These may be addressed with reference to the ADSTAR (or DORIC/W) systems. Printers and other output devices generally have high maintenance costs and low mean times between failures.

Communications

CRAFT, whatever form it ultimately takes, will require communications support, whether for the transmission and receipt of record messages, for access to Headquarters data bases, for the transmission of facsimile images, or for the interconnection of a field station with a Headquarters Branch officer in a conversational mode, or for all of these simultaneously. Secure

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

communications will also be required within overseas field stations among terminals or between terminals and local data bases.

Interstation communications will be supported through the Office of Communications world-wide network. In describing the services available in the long term over this network, two programs, SKYLINK and MERCURY, must be addressed. The SKYLINK program is an ongoing effort to provide high quality, highly reliable satellite communications to most overseas field stations. [redacted] 25X1

25X1 [redacted] satellites and Agency owned and operated ground terminals at field stations and communications base stations, will ultimately provide service to [redacted] field 25X1A stations. _____ field stations and _____ communication relay stations are using the SKYLINK system today, and the present plan calls for completion of the SKYLINK network by 19__.

The present SKYLINK field terminal provides for, at a minimum, dual 75 bits per second (bps) narrative data channels and a 2400 bps alternate voice/data (AVD) channel which may be used on a shared, call-up basis. A program is underway to develop and install an updated SKYLINK field terminal, the SC-3. The SC-3, which will be installed in field stations beginning _____, will provide a total capability of 19,200 bps at each terminal. The portion of that capability actually

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

used at each station will be limited by the amount of satellite power allocated to the Agency by [redacted] With the present power budget, the average full-time capability would be limited to less than 600 bps per station. In addition, 40% of the field stations would be able to use an AVD channel at any given time. 25X1A

MERCURY, a program still in the planning stage, is being designed to provide a full range of communications services to field stations. These services will include narrative and data message services, support for terminal-to-host interactive sessions, support for transaction-oriented services (for example, 25X1 [redacted] electronic mail), and support for the transfer of bulk data. For all service requirements, MERCURY will provide a secure, highly reliable, virtually error-free communications system. This system will rely on a packet-switched backbone network coupled with data concentrators and message processing systems in field stations, and systems at Headquarters and, possibly some communication relay stations, providing message and data storage and switching and network management. The system will be capable of efficiently utilizing a variety of transmission media. While it will rely primarily on SKYLINK, it will also be capable of using leased or dial-up lines or high frequency (HF) radio, either for primary or back-up circuitry. It is projected that MERCURY implementation will begin in late 1983, with a phased approach taking several years to complete.

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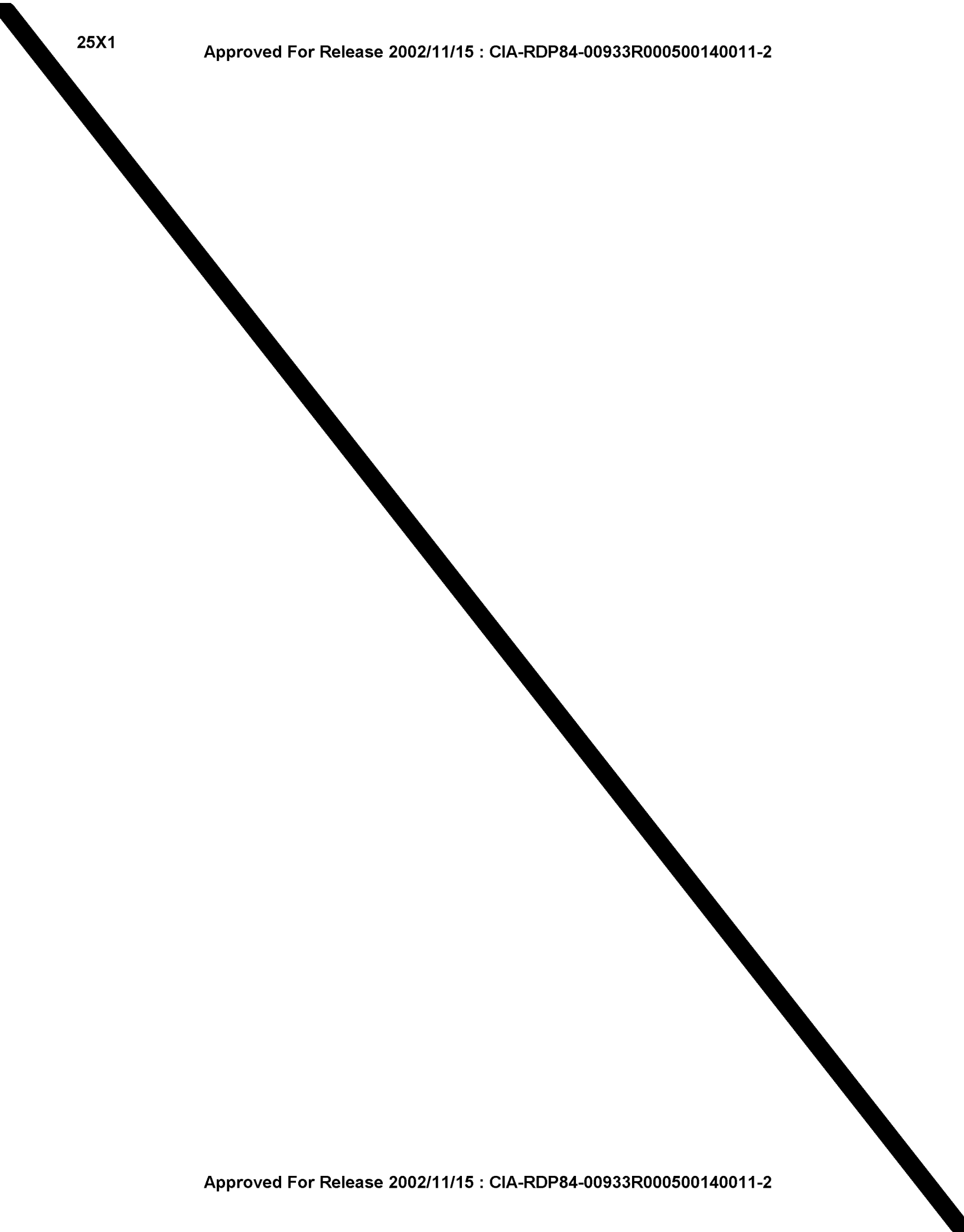

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Whatever combination of communications systems may ultimately be used, the issue of back-up communications remains, and may become a key factor in deciding between distributed and centralized CRAFT Architectures. The present "last ditch" back-up communications posture for all stations is to revert to low or medium speed HF radio. Whether or not this will be sufficient to meet the needs of CRAFT in a back-up situation must be given careful consideration, as any change to the back-up plans will require both time and potentially large sums of money to implement.

Communications within stations will also be required in some instances. While intra-station secure communications can be provided using off-the-shelf link encryption equipment, it is desirable to explore options which could utilize equipment which might be smaller, easier to operate, and less expensive. Options

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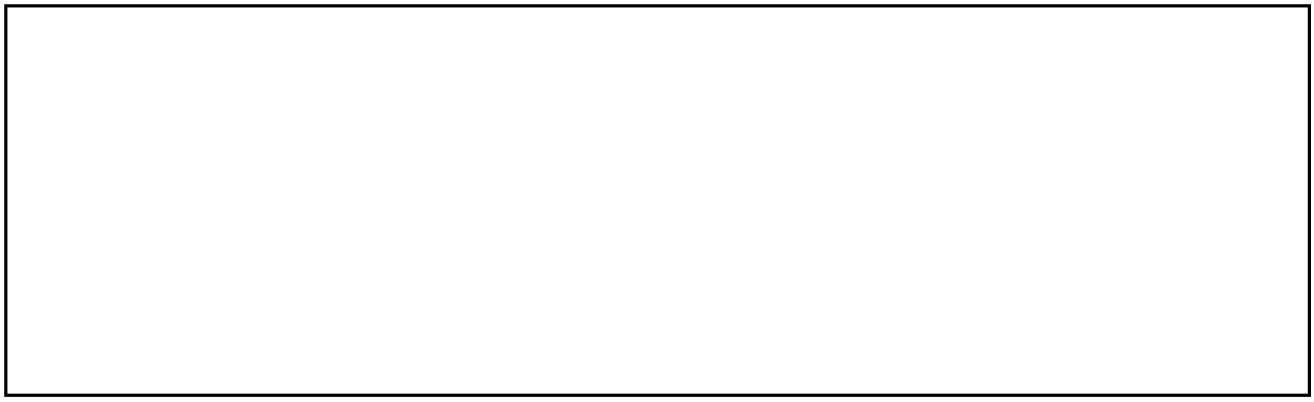

General

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Any architecture chosen for the CRAFT realization must address the issues of back-up in case of system outages. The functional requirements do not provide sufficient detail to determine what kinds of outages (by type of service) can be tolerated or for what duration. Secondary means of support must be specified in the system design to support given levels of outages of communications or data processing services. Loss of service cannot be allowed to interfere with on-going station activities. Recovery after an outage cannot impose any excessive burdens on the station. Burdens must be borne primarily by intermediate network nodes or Headquarters.

Finally, no architecture can be specified which will require a modification to a station which would be rejected by a

25X1 [redacted] This may impose certain constraints on building modifications to support the data processing or communications equipment (e.g. antennas).

The architectural considerations may have raised more issues than they resolved. At a minimum CRAFT will require a terminal to be available to each field officer. If the field officer is to work more closely with his Headquarters support then the Headquarters officers may also require terminal access. The terminal in the field, aside from permitting entry to the CRAFT services, will probably support the majority of the word processing requirements. If data processing/document processing

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is supported in the field, then the terminal will be attached to some minicomputer configuration at the station. If the data processing support is not immediately located at the station, then the terminal will tie into some communications network. If the communication and/or data processing support cannot be totally provided by a link to Headquarters, then there may be regional data concentrators or data processing nodes in the CRAFT network. Ultimately data would be passed to Headquarters, finding its way to the data processing facilities located there. At a minimum storage would be provided to back-up field holdings. At a maximum, a system similar in scope to SAFE may be indicated.

The first phase of the CRAFT program must be a functional requirements analysis addressing data operations analysis at both the field station and at Headquarters. This will be followed by the development of a statement of work that will be weighed against specific design proposals. System development will follow the selection of the most appropriate design. The implementation section discusses this in more detail. As this solution, the long-term solution, will require several years to realize and, as there is great concern to provide at least some improvement within the next few years, an interim approach shall be described. This approach should be recognized as providing a modest improvement in the security and efficiency of present station activities. Its adequacy should not be overestimated, as it does not address the fundamental relationships between field

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

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and Headquarters activities nor does it provide positive assurances that all records can be denied to a station intruder.

Recognizing the need for additional analysis prior to finalizing the ultimate system architecture, and that the development time required is not responsive to the need to accelerate CRAFT, an interim solution is required. Since this interim system would be based primarily on requirements as they are known today, a more definitive projection can be made concerning methodology. As in the case of the long term several alternatives are available. Appendix _____ discusses these alternatives. From the discussion, only one viable alternative is available that will meet the acceleration objective and provide increased information management efficiency in the field. This alternative is the placement of intelligent terminals and minicomputers in the field.

The services that will be provided by the interim solution are in the same categories as those envisioned for the long term, namely word processing, data processing, document processing, and communication/ADP interfaces. NOC communications probably will not be addressed in this interim solution unless there are specific needs in this area during the time frame that the interim system will be in operation.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Although more refinement is needed in some of the ADP requirements areas, there is considerable knowledge of the existing functional needs that will permit ADP application development to start immediately. Included in these specific needs is a capability to store into and retrieve full text documents from such automated files as central chrono, operational support, case officer reference files, and personality files. A part of this requirement is the need to capture, in digital form, incoming electrical traffic that can be directly loaded to these files. In addition, data processing applications are required to support name tracing, target analysis, surveillance activities, safe house location and utilization of agent meeting places, dead drop location, hostile installations, radio frequency utilization, and secret writing inventories. Where possible, the information in the above categories that is currently contained in Headquarters ADP systems will be extracted and used in building the field data bases. Further definition and typical file contents for the ADP applications are contained in Attachment _____.

Because of the complex analysis that must be performed to define the long term solution it cannot be determined at this time whether any of the equipment or files will be applicable to the interim approach. Clearly the Headquarters data bases will continue in existence, probably as structured, so there is hope for at least some functional capability in that area. Field

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

activities in a fundamental sense may not change markedly due to, if for no other reason, normal human resistance to change. Based upon the expected life of the Agency Standard Terminal, it is likely that this equipment may remain the same during the transition from interim to long term solutions. This device is under consideration for use as the SAFE terminal.

Recommendation - Short Term

For the short term an approach is recommended which will have high potential for quick implementation, thus realizing the goal of providing support to the field stations as soon as possible.

It is important, however, to place the interim solution into perspective. This solution is based upon the work done on the Testbeds. Neither Testbed project is complete. Only word processing equipment has been installed in [redacted] and the 25X1A

25X1A [redacted] Testbed is only in the planning stages. From the outset the Testbed concept was established to prove that automation would indeed achieve the objectives for CRAFT. Because of the approach (i.e. concept validation), no extensive systems analysis for the ultimate architecture was performed prior to the specification of these Testbeds. The original pacing of the CRAFT program allowed for modification of the

Testbeds prior to overseas deployment should they be found wanting. The field experience to establish that this automation effort would significantly enhance the efficiency of the stations is therefore lacking. It can be stated, however, that the word processing support has already met with wide acceptance and experience with Headquarters systems of the nature that will be implemented in the field, has shown that marked improvements in management information through automation can be obtained. Further, preliminary evaluation by FR personnel of the testbed system at Headquarters have been extremely favorable. From a security point of view, although all hardware will meet TEMPEST requirements, a major portion of systems security must be provided by a combination of technical, physical, and information systems security measures to prevent unauthorized access to station data files since commercially available computer operating systems are not certifiable by Agency standards. Destruction techniques for magnetic media require further testing and analysis. Some development in this area may be required. Furthermore, the data processing proposed will address the transformation of some existing field station holdings but it is yet to be determined which records can be effectively converted for operability and storage capacity reasons. Finally, it should be noted that the interim solution requires a major maintenance burden for overseas equipment. This is not a desirable feature for a long-term solution. Therefore, it is advised that the interim solution be accepted as precisely that - a stop-gap

measure which is effective in meeting, at least partially, the CRAFT objectives - but a solution to be replaced in the long term.

In a memorandum attached to this paper, the Finance project leader observes the weaknesses in the CLASS A system with respect to minimizing paper holdings at the field station. The Director of Finance reserves the right to determine the adequacy of the CLASS A system as presently defined to service finance officers at large stations.

Immediately following the approval of this concept paper, it is recommended that a project management office be established in the Information Management Staff reporting directly to C/IMS. This office would be headed by a full-time project manager at the GS-16 level, supported by a nucleus of mid-level personnel, including _____ systems analysts, one operations officer with field management experience, and one records officer selected by IMS, and one officer each from the Offices of Security, Communications, and Data Processing. The operations officer assigned to the project management office would be the focal point for CRAFT representatives in each DO area division. It is important for all staff personnel assigned to the project office to be dedicated to the CRAFT project and relieved of other responsibilities.

Within the near term it is not likely that total project staffing to develop, install, and maintain the system can be handled by existing staff personnel. Recruitment of additional staff personnel will require assistance from the O/PPPM to meet the project schedule, an involved and time-consuming procedure. A better approach is to procure services from U. S. industry. This will still require expedited security clearances. The contracted approach has the added benefit of not involving fundamental changes in T/O, plus ease in termination of the services when no longer required. Finally, it should be recognized as a practical matter that it is far easier to apply leverage on a contractor than upon staff components of the Agency. From a project management viewpoint, the use of contractors is a more conservative, "safer", approach than relying upon staff support for project development.

The short term approach calls for the deployment overseas of hardware to meet most word processing and data processing requirements locally. The hardware recommended is standalone intelligent terminals installed in small to medium-sized stations 25X1A [redacted] where they can satisfy most of the data processing and word processing requirements. Since the standalone intelligent terminal does not have the data processing or document storage capacity to meet the requirements of large field stations, the short term recommendation also includes minicomputers and backups at [redacted] field stations, to be 25X1

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

used in connection with intelligent terminals which will operate as input/output mechanisms as well as standalone devices. Various numbers, configurations, and combinations of minicomputers and terminals are possible, permitting flexibility in selecting optimum equipment configurations to match the particular requirements of individual stations.

The terminal recommended is the new Agency Standard Delta Data 7000 CRT terminal. This is a TEMPEST approved, desk top, programmable micro-computer that can serve both as a word processor and as a file processor. It can support moderately complex ADP applications, such as a financial accounting system, as well as the manipulation of operational indexes. The terminal can be connected to the staff communications system and can be maintained in the field. It is constructed so that a majority of the electronic components are mounted on easily replaceable circuit boards, and it has self-diagnostic capabilities.

While word processing is not provided directly by the minicomputer, it would be provided by the intelligent terminals, which would perform the dual role of word processor and computer access device. It will support the word processing requirements as defined by the testbeds. Terminals could be placed near the minicomputer, in other rooms, or in more distant locations using communications facilities.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

The minicomputer recommended is the Honeywell Level 6 system being used in development of the [redacted] 25X1A Project. This is a modular system that can be sized to meet the ADP processing requirements of any station. All of its associated hardware is TEMPEST approved and can be maintained in the field. For reasons of backup and reliability, a dual computer configuration is the minimum planned. The software will be configured to provide data processing and document storage and retrieval services similar to those provided at [redacted] 25X1A

The minicomputer will service multiple users and multiple applications concurrently, and at the same time provide a continual link to the staff communications system. The link will be used to provide services similar in scope to that provided at 25X1A [redacted] It can also be programmed to provide protection against unauthorized access and to allow for compartmentation of information.

The short term approach has several key ingredients:

- It capitalizes on experience with Headquarters ADP support and that gained in the development of the two CRAFT testbeds.

- It recognizes interdirectorate interests, expertise, and the magnitude of a worldwide effort of this nature.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

- It uses hardware and communications facilities which are already available, reducing development time.

- It is possible to emphasize in each aspect of planning and implementation the needs of the user, attitudes toward change, and training. These are vital to the long-term success of CRAFT. While the interim solution does not assure the achievement of the total CRAFT objectives for this program, it is possible to maximize the benefits the interim solution will achieve by attention to these details.

Recommendations - Long Term

No firm long term recommendation can be made at this time. Several alternative proposals are briefly described in the System Concepts section of this paper, but no conclusions can be reached without further data. The long term solution, therefore, is dependent upon a study to further define the functional requirements which will provide the basis for sizing communications, word processing, and data processing requirements. This, in turn, will lead to a recommendation for a long term solution.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Implementation

A. General

To implement the foregoing recommendations, a comprehensive plan and aggressive schedule is required. Two parallel efforts must be undertaken, one directed at the short term goal of installing the standalone intelligent terminals and minicomputers at the field stations, and another to begin defining the longer term solution. The two efforts will be discussed individually.

B. Organization

Implementation will require an interdirectorate effort. Overall management of the project will be the responsibility of C/IMS. In this capacity he will chair an interdirectorate board consisting of the office directors from OC, ODP, OF, OS, OTR, and OL in the DDA, and from OTS in the DDS&T. This board will provide policy guidance. Resource requirements will be directed through the C/IMS via the funding mechanism established for CRAFT. A project office will be established, reporting directly to C/IMS, and headed by a senior officer. It will be staffed full-time by IMS officers and representatives detailed to IMS from the Offices of Security, Communications, and Data Processing. This management group will define and integrate

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requirements, coordinate resource planning and allocation, develop and monitor contractual activities, and follow the project through IOC. Individual members will monitor those project activities within their areas of expertise and responsibility. They will also serve as points of contact and coordination on day to day matters involving their respective home base organizations.

The interim system development will proceed from a reevaluation of the Testbed activities in light of the acceleration of the CRAFT program. The initial field station surveys will be selected so as to develop the best guidance as to the specific functional activities which may have to be modified or developed to meet station needs. This activity will determine the specific characteristics of the applications to be implemented. The [redacted] activities, as well as the CLASSA installations, will be evaluated to determine if there are any unforeseen problems associated with the viability of the selected equipment in the field.

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The resulting functional and system specifications will be divided into two categories:

- Those applications for the Agency Standard terminal and minicomputer which may be developed in-house with low risk of exceeding programming resources of time to develop.

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- Those applications for the selected equipment which require contractor assistance to meet the CRAFT program schedule. Any significant system integration work will be performed under contract.

The system evaluations, interim solution functions and system specifications, resource allocation plan, and program management plan will be formalized into documents by the program office for concurrence by the interdirectorate board.

In-house software development will be assigned to Systems Group/IMS in a fashion similar to work assigned to contractors. Milestones associated with design, development, testing, integration, and installation will be formalized and used to monitor the course of the interim solution effort.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

C. Implementation Plan

1. Near Term Effort - Installation of terminals and minicomputers at the field stations.

a. Development Activities.

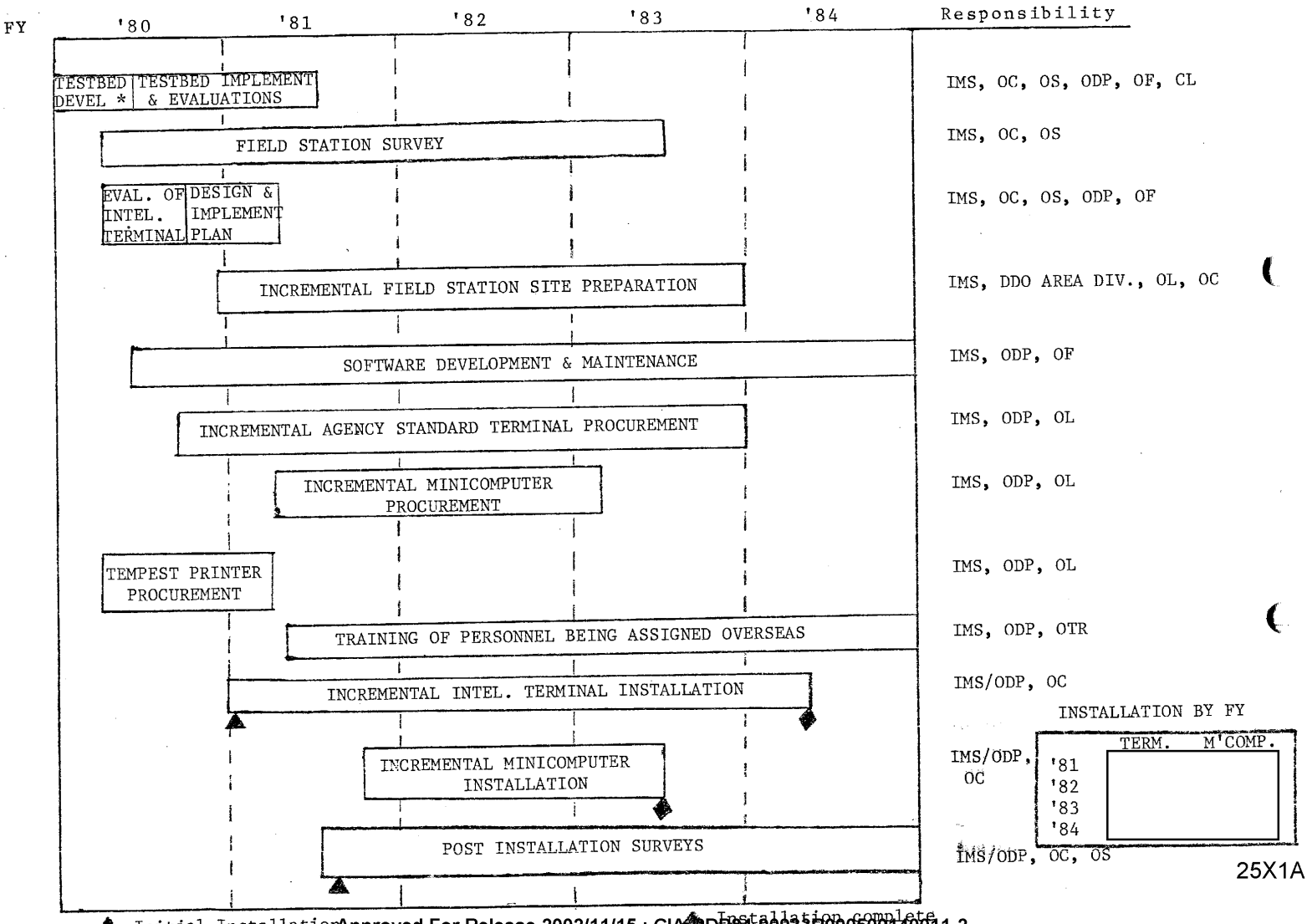
The major tasks to be accomplished and the timing and relationship of these tasks is shown in Figure 1. Implementation activities for the near term will be concentrated on completion of the [redacted] 25X1A
25X1A [redacted] Testbed, coupled with concurrent evaluation, testing and application development on the Agency Standard terminal and minicomputer. This will provide for hardware and software evaluation for both the large and small stations.

The minicomputer coupled with the intelligent terminal will be representative of the configuration proposed for sites that will require a larger system due to extensive data and word processing requirements and the Class A Accounting System.

The use of the Agency Standard terminal as a standalone word processor will be typical of the expected utilization at the smaller station.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

ACCELERATED DEVELOPMENT - NEAR TERM MILESTONES



25X1A

▲ Initial Installation ◆ Installation complete

* Initiated in May '78

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

FIGURE 1

The near-term (FY-81) installations of ADP equipments shall utilize the requirements analysis, design, and development efforts which have been undertaken since May 1978. A number of applications, discussed below, have been identified and sized for the Agency Standard terminal. The minicomputer application for near-term deployment, also discussed below, will draw heavily per the [redacted] testbed applications. 25X1A

Initial capabilities to be implemented with the installation of the Agency Standard Terminal at the small stations starting in first quarter FY-81 will include word processing; document storage and retrieval of all internally generated documents, to include copies of outgoing cables, telepouches and dispatches; and data processing. Included in this latter category will be applications to support local 25X1A

25X1A [redacted]

made of the administrative (personnel, logistic, finance, etc.) support requirements and software development will be initiated in these areas. The implementation of an interface between the Agency Standard Terminal and the staff communication systems at those stations that have data quality circuits is targeted for late FY-81.

At the larger stations where the minicomputer and the intelligent terminals will be installed starting in fourth quarter FY-81, the same type of support services (word processing, document storage and retrieval, and data processing) will be provided. Capitalizing on the development work performed in

25X1A

conjunction with the [redacted] testbed, the initial capabilities will include a sophisticated document processing and electronic mail distribution function, a comprehensive biographical reference system and CLASSA Accounting System. In addition, systems to

25X1A

[redacted]

initial deployment. Additional ADP application similar to those addressed above for the small station will be implemented at the larger stations as well. Interface between the ADP and communications systems should be accomplished in early FY-82.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Concurrent with the implementation and evaluation of the [redacted] and the development of applications on the Agency Standard terminal, a survey of a select group of field stations will be conducted to ascertain the magnitude of the word and data processing requirements, the size of their file holdings, the availability of space and power, the environmental conditions, the type of communications facilities, and the local hardware maintenance capabilities. The group will be selected on the basis of the 1979 Records Inventory, geographical location, and information already available on the points listed above. Based on the results of this survey, a schedule will be developed for the overseas installation of equipment, with priority consideration given to stations judged most vulnerable to overrun and those that can support early implementation of the system. This survey will also be used to identify the specific ADP applications that should be developed for initial implementation--those that will result in the most benefit to the majority of stations. Another outcome of the survey will be identification of the site preparation needs of the stations, to include physical security considerations, that will permit early initiation of actions required to accomplish

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Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

the work. The survey will also serve as a basis for planning the required data conversion (from paper to microfiche or digital storage). Lastly, the initial survey will determine the timing, nature, and itinerary of subsequent surveys of the remaining field stations.

During the third quarter of FY 80, procurement action will be initiated for the terminals. Minicomputer procurement will begin in early FY 1981. One system, however, will be purchased in FY 1980, to be used for development purposes. It is assumed that terminals can be installed at the rate of two stations per month, starting in the first quarter of FY 81 and that the minicomputers can be installed at a rate of one station per month starting in the fourth quarter of FY 81. It will be further assumed that resources and site preparation will permit installation of the terminals to be accelerated to four stations per month starting in the second quarter of FY 82. In addition to the procurement of the terminals and minicomputers, action will also be initiated for the development and procurement of a letter quality TEMPEST printer that will support word processing and other hard copy production needs. The printer at

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

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some of the early installations, although off-the-shelf (Teletype Model 40) and TEMPEST approved, will not be letter quality; that is, its product will look like it came from a typical teletype rather than from a typewriter. Installation of terminals and minicomputers will proceed until all overseas sites are equipped in [redacted] Software development will also be a continuing effort, so that data processing capabilities at the field station may be enhanced. Although initial maintenance and training of station personnel will be the responsibility of an implementation team from Headquarters, OTR must plan for the establishment of training courses at Headquarters for personnel being assigned overseas. 25X1

b. Costs

In deriving cost estimates for the near term effort, the following assumptions have been made.

- Pre-installation survey visits to some overseas stations will be required as part of the requirements study. The composition of the survey teams will be a DDO/IMS records specialist, a computer specialist, a security specialist, and a communications technician.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

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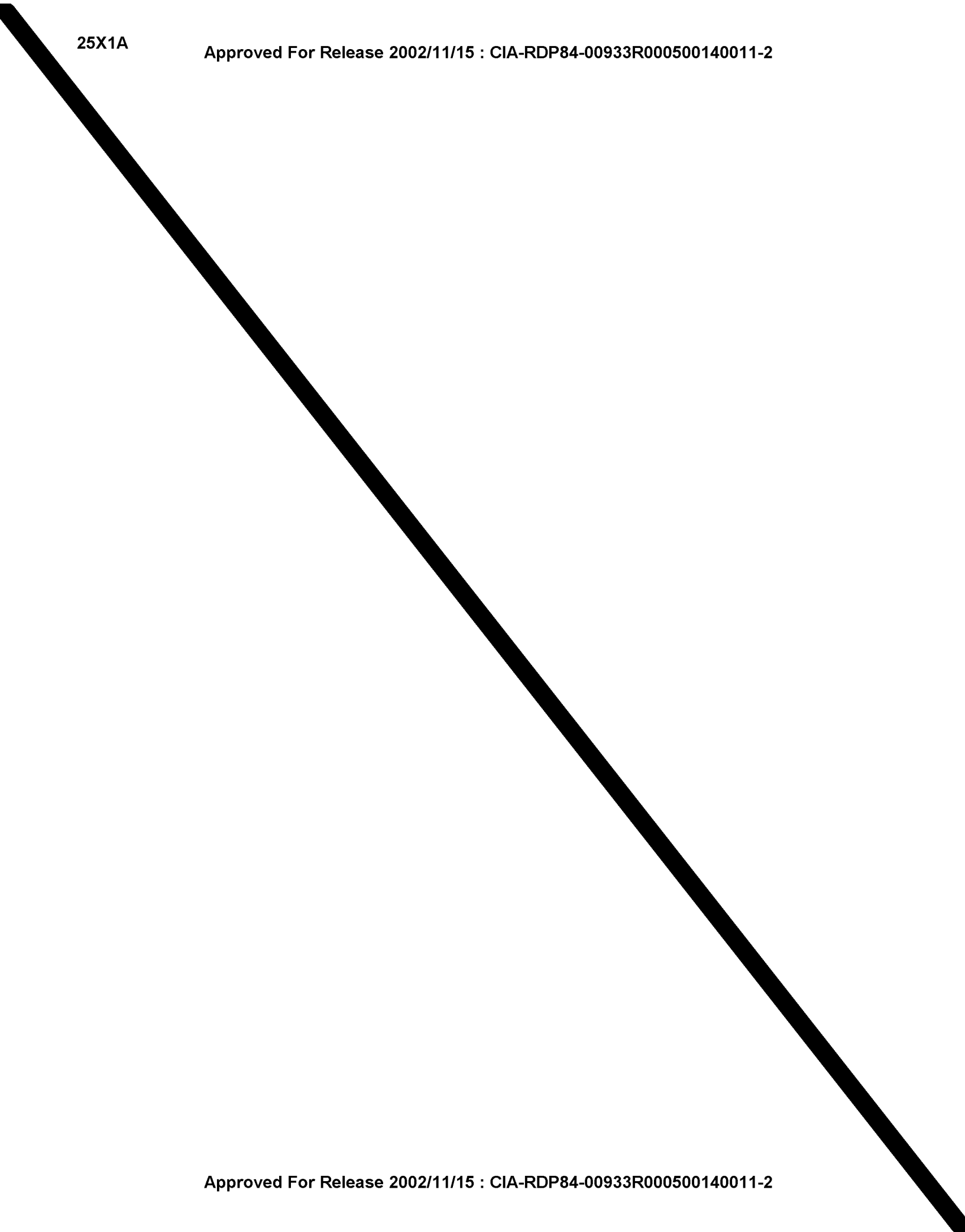

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

- Only currently installed or programmed upgrades to the Agency's communications system will be utilized for the near term effort.

- Implementation teams for the small and medium-sized stations will consist of two computer specialists and one communications technician. An average of two to three weeks will be required for implementation and training at each of these stations.

- Implementation teams for the [redacted] stations will consist of three computer specialists and two communications technicians. An average of four to six weeks will be required for implementation and training at each of these stations.

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Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

25X1A

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

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Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

2. Long Term Effort - Implementation of central ADP facilities to support field station terminals via communications links.

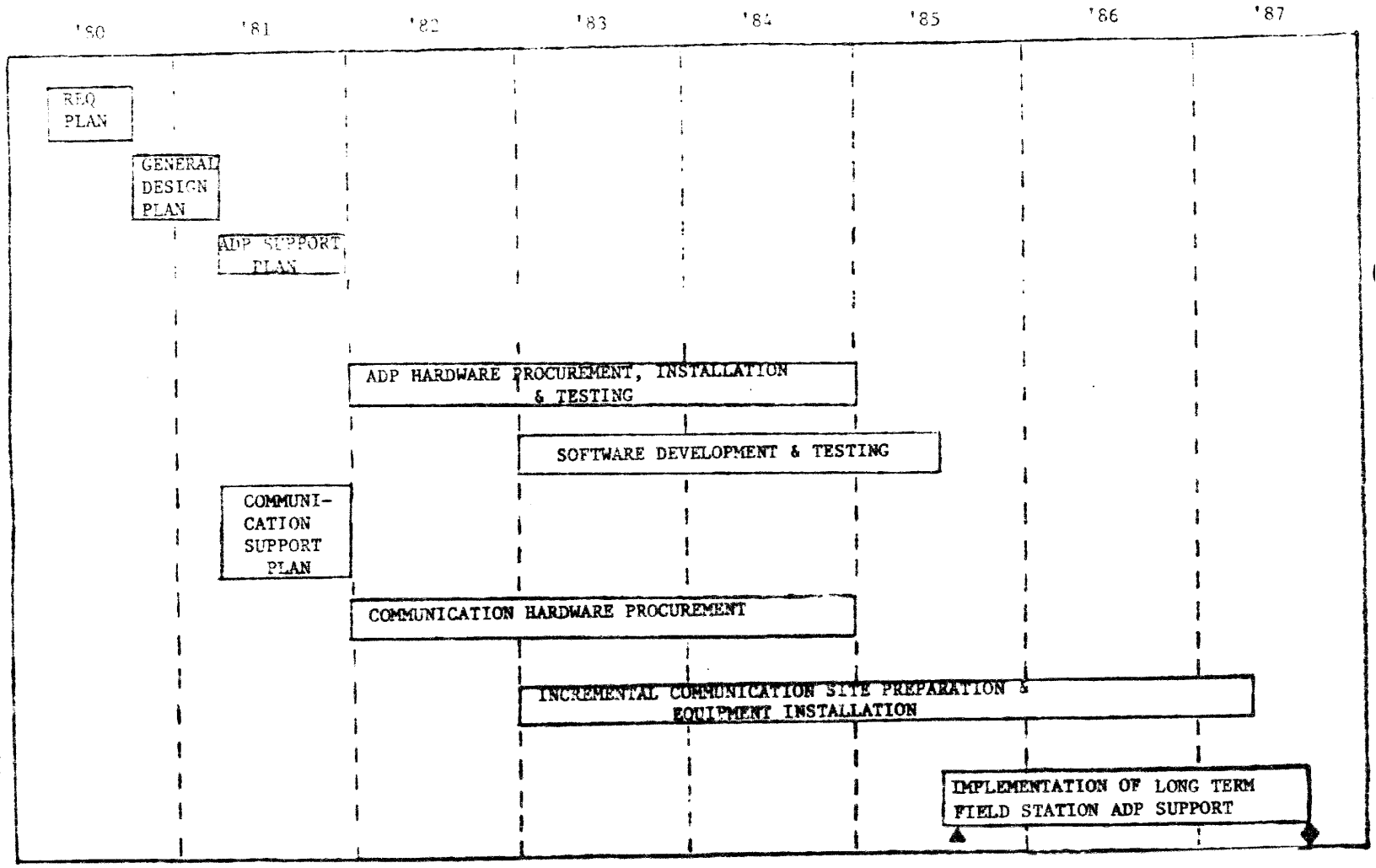
a. Tasking.

The tasking and timing for this approach is shown in Figure 2. As would be expected with an effort of this magnitude, a considerable amount of startup time will be required before an initial operating capability can be implemented. The first step must be the development of a comprehensive statement of requirements that will serve as the basis for a design plan and for sizing the computer and communications workload. These requirements will be refined as experience is gained from the implementation of the standalone intelligent terminals and minicomputers at the field stations. Following requirements definition, the system design effort will address not only architecture but such questions as the need for minicomputers in the field after the central facility becomes operational, the need for more sophisticated field terminals, application software considerations, etc. The requirements definition and the design paper will serve as

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

LONG TERM PROJECT ACTIVITIES



▲ INITIAL OPERATING CAPABILITY

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

FIGURE 2

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the basis for ODP and OC to prepare ADP and communications plans which will include their own cost estimates and personnel requirements. Site preparation, hardware selection, and installation will follow. The OC plan will result in the identification and implementation of facilities needed to support the project. The communications plan will also address long-term maintenance support at the stations. Once the ADP hardware selection has been made, work can begin on application and system software development, and on work to connect the field stations to the central facility.

b. Costs and Personnel

Due to the uncertainties involved in the type and size of ADP hardware and communications facilities that will be needed to support this long-term effort, attempting even reasonable estimates of cost and resource requirements is impractical at this time. Funding and manning level estimates will be the product of the ADP and communications plans developed early in this part of the project.

Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2

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Approved For Release 2002/11/15 : CIA-RDP84-00933R000500140011-2